3-2009

Electronic commerce research and applications ECRA co-editors' introduction for volume 8, issue 2, March - April 2009

Robert J. KAUFFMAN
Singapore Management University, rkauffman@smu.edu.sg

Patrick Y. K. CHAU
University of Hong Kong

Terry R. PAYNE
University of Liverpool

J. Christopher WESTLAND
University of Illinois at Chicago

DOI: https://doi.org/10.1016/j.elerap.2008.11.008

Editorial

Electronic commerce research and applications ECRA Co-Editors' Introduction for Volume 8, Issue 2, March–April 2009

Many efforts are occurring around the world to improve supply chain performance to best-practice levels to improve the profitability of manufacturing and service firms. As a result, there is great interest among industry leaders and academic researchers to find ways to coordinate and streamline all of the activities in the supply procurement process as a basis for cost management, managed quality, and strategic competitiveness. With the Internet, the possibility of implementing many innovative new approaches to procurement has driven firms to want much higher performance than they currently seem to be able to achieve. Some of the innovations include dynamic market participation, spot market procurement, reverse auctions, trading agent-based searches and transaction matching, and electronic combinatorial procurement auctions.

Yet the world has been slow to catch up to the high frontier of technological innovations. We observe, for example, that many interfirm relationships in procurement continue to involve long-term relationships. The institutional relationships that develop involve strong bonds between buyers and suppliers that are hard to break. In addition, we see some firms continuing to emphasize an operational and financial risk management approach in procurement that stresses cooperation for supply roll-back and overstock cost-sharing. This is so they are protected when demand destabilizes and becomes hard to estimate. Most firms base their approach on strategic logic that has been described in the now seminal research of Eric K. Clemons, Sashi Reddi and Michael Row, published in the *Journal of Management Information Systems* in 1993, who proposed a '*move-to-the-middle*' *theory*. The essence of their theory is that most interfirm procurement arrangements are typically made between the extremes of high-risk, unified, single-supplier relationship-based procurement, and high-cost, diversified, many-supplier market-based procurement. Thus, when we consider this perspective, it is easy to come to the conclusion that a technological innovation may not go a long way. Instead, the new approaches will need to be not just innovative, but also need to reflect the true complexity of decision-making in supply chain management settings and deliver measurable benefits.

Special section: Supply Chain Trading Agent Research

The premise of this special issue is that the static quality of most firms' supply chains, and their reliance on long-term firm-to-firm relationships diminishes the opportunity for them to achieve value-maximizing buyer–seller procurement transactions in the presence of price, product, service, vendor and market changes. The special issue editors, John Collins and Norman Sadeh, suggest that seeking solutions to achieve the transformation of a firm's supply chain to a more dynamic process has been very challenging though. This occurs, in part, due to the complexity of interfirm relationships, long-established contracts, and implicit assurances about the handling of incomplete contracting issues (e.g., quality problems, short-notice orders, supplier tier relationship management, etc.) that have developed around the supply chain activities of large organizations.

One potentially interesting approach, they observe, can be based on the idea of letting the technology take charge. The guest editors and some of the authors of articles in this special section have been leaders over the years in the Internet-based 'Trading Agent Competition for Supply Chain Management' (TAC-SCM), which was established by the e-Supply Chain Management Lab at Carnegie Mellon University, and the Swedish Institute of Computer Science. The competition focuses on the construction of trading agent approaches that permit computers to make decisions about a PC manufacturer scenario based on the sourcing of components, the manufacturing of PCs, and their sale to customers. The home page of TAC-SCM reports that the competition was designed to promote and encourage high quality research on the design, application and evaluation of autonomous trading agent technologies.

The special section articles that follow explore competition for the evaluation of mixed procurement strategies in agent-based supply chain trading, coordinated selection of supply chain bids, flexibility in control over agent-based decision-making, and the interaction between the forecasting of market prices for supplies and supply chain decision-making. Although we will leave it to the guest editors to provide more detailed descriptions of each of the four articles contained in the special section, we have a number of observations on this interesting research to share with the reader. First, the strong interdisciplinary nature of these research works reflects the complexity of supply chain management decision-making with technology, and they set 'the bar' high for the creation of new knowledge and strong research contributions to this journal. Second, each of the papers in different ways emphasizes the importance of modeling and analysis of the supply chain management setting, as well as the design of novel technology artifacts (in this case, algorithms, agent software, and decision support

systems) that are aimed at improving decision performance. Operations research and mathematical approaches play an important role, for example, as does the design of algorithmic and heuristic solution approaches. Third, all of the papers illustrate solution approaches to different aspects of the supply chain management process, including forecasting prices, coordination of procurement bid, the implementation of mixed procurement strategies, and the benefits of decision control flexibility.

Final comments

We would like to take this opportunity to thank John Collins and Norman Sadeh for their continuing service to the interdisciplinary technology research community, their commitment to this journal, and the unique research contributions that they have brought together for the Special Section on Supply Chain Trading Agent Research. We also would like to thank the reviewers who contributed their time and insights on the Special Section papers.

Available online 25 December 2008